

**Notice of Allowability**

Application No.

10/605,312

Examiner

Eric B. Chen

Applicant(s)

SUMAKERIS, JOSEPH JOHN

Art Unit

1765

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 7/6/05.
2. ☒ The allowed claim(s) is/are 4 and 6-30.
3. ☐ The drawings filed on \_\_\_\_\_ are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some\* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☒ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
- (a) ☒ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
- 1) ☒ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |                                                                                                                                |                                                                                                              |
|--------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                                    | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)                                  |
| 2. <input checked="" type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date <u>08052005</u> . |
| 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),<br>Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment                                          |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material                     | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance                         |
|                                                                                                                                | 9. <input type="checkbox"/> Other _____                                                                      |

### **EXAMINER'S AMENDMENT**

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.
2. Authorization for this examiner's amendment was given in a telephone interview with Phil Summa on Sept. 8, 2005.
3. In the claims (Amendments to the Claims, pages 2-3, filed July 6, 2005), for claims 4, 6, 7, 10, and 11, delete "(Amended)" and insert -- (Currently Amended) --.

### ***Drawings***

4. The drawings were received on June 20, 2005. These drawings are not acceptable because in Figure 2, the feature denoted by reference character "14" is not distinguishable. It should be noted that the reproduction of Figures 2 and 3 in Applicant's Remarks (page 10), filed June 20, 2005, would be acceptable if submitted as a drawing sheet pursuant to 37 CFR 1.121(d).

### ***Allowable Subject Matter***

5. Claim 4 and 6-30 are allowed.
6. The following is an examiner's statement of reasons for allowance: the prior art fails to teach or suggest developing etch-generated structures from at least any basal

plane dislocations on the substrate that will thereafter tend to either terminate or to propagate as threading dislocations during subsequent epilayer growth on the substrate surface, as in the context of claims 11 or 24. The closest prior art, Powell, discloses a method comprising: conducting a first non-selective etch on the surface of a silicon carbide substrate (24) (column 11, lines 14-20) to remove both surface and subsurface damage (column 11, lines 49-53); and growing a conductive epitaxial layer on the etched substrate surface (column 12, lines 44-56). Powell's method is directed at producing atomically-flat single crystal surfaces (column 7, lines 35-37) for the subsequent epitaxial growth of low-defect crystal film (column 7, lines 66-67). However, there is no motivation or suggestion of developing etch-generated structures from at least any basal plane dislocations on the substrate that will thereafter tend to either terminate or to propagate as threading dislocations during subsequent epilayer growth on the substrate surface, as in the context of claims 11 or 24.

7. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Response to Arguments***

8. Applicant's arguments, (Applicant's Remarks, pages 8-9), filed Jun 20, 2005, with respect to the rejection of claims 11 and 24 under 35 U.S.C. 103(a) as being unpatentable over Powell, in view of Nishiguchi and Inoguchi have been fully

Art Unit: 1765

considered and are persuasive. Applicant has correctly pointed out that Powell reference is directed at producing atomically flat surfaces and teaches away from any technique that would use or encourage etch pits (Applicant's Remarks, page 8). The rejection of claims 11 and 24 has been withdrawn.

### ***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Palmour et al. (U.S. Patent No. 4,946,547) discloses a method of forming a homoepitaxial silicon carbide crystal by plasma etching surface damage from the substrate. Kawahara et al. (U.S. Patent No. 6,596,080) discloses silicon carbide growth by homoepitaxial deposition on parallel surface undulations.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric B. Chen whose telephone number is (571) 272-2947. The examiner can normally be reached on Monday through Friday, 8AM to 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine G. Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 1765

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

EBC  
Sept. 8, 2005

A handwritten signature in black ink, appearing to be 'EBC' with a stylized flourish extending from the end.